Supplementary material

Table S1. Mean normalised amount (ng g^{-1} leaf weight hr^{-1}) of EAG-active compounds emitted by *Triticum aestivum* Solstice and *T. monococcum* MDR037, MDR045 and MDR049 plants subjected to alate *Sitobion avenae* densities (n = 0, 1, 5, 10, 25).

Accession	*Aphid Density*	*Acetoxy acetone*	*Ethylbenzene*	*Cyclohexanone*	*Heptanal*	*Benzaldehyde*	*Hexanoic Acid*	*6-Methyl-5-hepten-2-one*	*Octanal*	*Nonanal*	*Undecane*	*3-EthylBenzaldehyde*	*3-EthylPhenol*	*Decanal*	*Nonanoic Acid*	*4-EthylBenzoic Acid*	*Tetradecane*	*(E)-ß-Farnesene*	*Pentadecane*	*Hexadecane*	*Heptadecane*
MDR049	0	3.2	9.4	35.3	28.8	7.3	2.4	0.7	6.7	9.2	0.4	2.2	0.3	5.7	0.2	0.4	3.9	0.4	0.5	1.8	1.4
MDR049	1	5.9	14.7	44.0	39.3	11.7	3.7	0.9	6.6	12.6	1.6	1.2	0.0	7.8	2.6	0.2	4.1	0.2	0.5	1.5	0.6
MDR049	5	5.3	14.5	31.5	34.6	8.4	2.9	0.3	7.9	13.1	0.4	0.9	0.2	7.5	0.6	0.4	3.8	0.2	1.3	1.5	0.9
MDR049	10	2.2	4.3	14.5	14.6	2.7	0.6	0.2	2.6	3.9	0.1	0.4	0.0	1.6	0.1	0.0	1.2	0.2	0.1	0.8	0.6
MDR049	25	3.8	9.8	29.7	23.2	7.4	1.8	0.0	6.4	8.8	0.4	2.8	0.0	4.0	0.8	0.1	2.9	0.6	0.2	2.0	1.5
MDR045	0	5.2	31.9	26.1	51.8	18.3	7.5	1.6	17.3	21.8	1.1	1.4	1.6	13.5	0.6	0.9	7.8	0.1	0.1	2.8	1.6
MDR045	1	3.2	10.5	21.6	24.3	6.1	1.8	0.3	5.4	9.9	0.4	1.4	0.3	5.7	0.4	0.4	4.0	0.6	1.7	2.2	1.6
MDR045	5	2.2	6.1	16.5	14.8	3.2	0.7	0.2	2.4	4.6	0.4	1.3	0.0	1.7	0.7	0.0	1.4	0.2	0.1	1.2	0.6
MDR045	10	5.7	14.7	30.6	37.9	8.9	2.4	1.1	8.4	11.3	0.5	0.8	0.3	6.2	0.9	0.3	2.9	0.1	0.5	2.2	0.7
MDR045	25	2.8	7.5	30.1	22.2	6.1	1.0	0.3	5.3	9.5	0.3	1.1	0.0	4.2	0.0	0.3	3.2	1.2	0.4	1.2	0.9
MDR037	0	3.3	21.1	51.7	45.9	13.0	4.5	0.1	11.8	16.2	0.7	1.4	0.2	10.2	0.7	0.3	5.1	0.4	0.3	3.4	1.7
MDR037	1	3.0	17.5	19.9	34.4	12.1	5.6	2.5	13.9	18.3	1.0	1.6	0.7	10.4	0.8	0.3	5.8	0.2	0.0	1.6	0.5
MDR037	5	4.2	19.4	21.9	41.3	13.8	5.0	0.4	12.7	16.5	0.8	1.7	0.9	9.3	0.8	0.4	5.5	0.5	0.0	2.8	1.7
MDR037	10	6.3	15.2	33.5	45.1	9.0	2.0	1.8	8.9	13.0	0.6	1.0	0.2	7.6	0.6	0.7	4.8	0.4	0.7	1.9	1.2
MDR037	25	3.5	7.9	18.6	23.4	5.6	1.6	0.0	5.7	8.4	0.2	0.6	0.1	3.9	0.0	0.2	1.1	1.7	0.1	0.9	1.0
Solstice	0	1.3	3.1	8.9	9.0	2.5	0.4	0.1	2.2	2.7	0.1	0.5	0.0	1.2	0.1	0.1	0.2	0.0	0.1	0.5	0.2
Solstice	1	4.4	30.8	9.5	56.7	12.8	6.7	4.8	14.1	19.9	1.6	1.7	0.0	13.2	0.9	1.1	10.0	0.4	0.0	4.9	3.5
Solstice	5	3.7	10.0	8.5	30.2	5.6	1.2	1.3	5.1	6.8	0.4	0.8	0.0	3.9	0.2	0.3	2.6	0.3	0.4	1.5	0.9
Solstice	10	2.1	4.9	11.2	15.5	6.2	2.0	0.1	6.0	10.0	0.4	1.8	0.5	6.0	0.7	3.0	3.8	0.2	0.3	1.7	0.7
Solstice	25	5.4	11.3	24.8	47.0	9.1	2.0	0.1	8.2	10.8	0.5	1.2	0.1	6.6	0.3	0.3	4.1	2.1	0.2	1.3	0.8

Table S2. Volume (µl) of authentic standard solutions (1mg/ml in diethyl ether) required to create a 10x concentration synthetic blend in diethyl ether (1 mL) for the EAG-active compounds from *Triticum aestivum* Solstice and *T. monococcum* MDR037, MDR045 and MDR049 headspace extract. Synthetic blends were subsequently diluted for use in olfactometry assays.

Accession	*MDR049*	*MDR049*	*MDR049*	*MDR049*	*MDR045*	*MDR037*	*Solstice*	*Solstice*
Aphid Density	*1*	*5*	*10*	*25*	*25*	*10*	*10*	*25*
Acetoxyacetone	4.1	3.4	1.8	1.8	1.8	4.8	1.4	4.1
Ethylbenzene	10.1	9.1	3.7	4.4	3.7	11.5	2.8	8.3
Cyclohexanone	30	21.1	12.5	13.6	17.9	26.1	8.3	17.1
Heptanal	7.8	5.2	2.6	3.5	3.6	6.8	3.9	7.2
Benzaldehyde	28	23.3	12.3	11.4	13.7	35.6	11.5	35.1
Hexanoic Acid	2.7	1.8	0.6	0.9	0.7	1.4	1.4	1.7
6-Methyl-5-hepten-2-one	0.5	0.2	0.2	0	0.2	1.3	0.1	0.2
Octanal	4.8	5.1	2.5	3.1	3.3	7	4.1	7
Nonanal	10.4	10	4.2	4.9	6.8	12.1	8.6	10.9
Undecane	1.2	0.3	0.2	0.2	0.2	0.5	0.3	0.5
3-Ethylbenzaldehyde	0.9	0.7	0.6	1.5	0.9	1	1.6	1.2
3-Ethylphenol	0	0.2	0	0	0	0.2	0.4	0
Decanal	6.4	5.5	1.8	2.2	3	6.6	4.9	6.3
Nonanoic Acid	2	0.5	0.1	0.4	0	0.5	0.8	0.3
4-Ethylbenzoic Acid	0.2	0.3	0	0.1	0.2	0.5	4.5	0.2
Tetradecane	2.9	2.4	1.1	1.4	1.9	3.9	2.4	3.2
(E)-β-Farnesene	0.1	0.1	0.2	0.3	0.8	0.3	0.1	1.7
Pentadecane	0.4	0.8	0.1	0.1	0.3	0.6	0.1	0.2
Hexadecane	1	1.1	0.7	1	0.8	1.6	1.5	1.1
Heptadecane	0.4	0.6	0.5	0.7	0.6	1	0.5	0.7

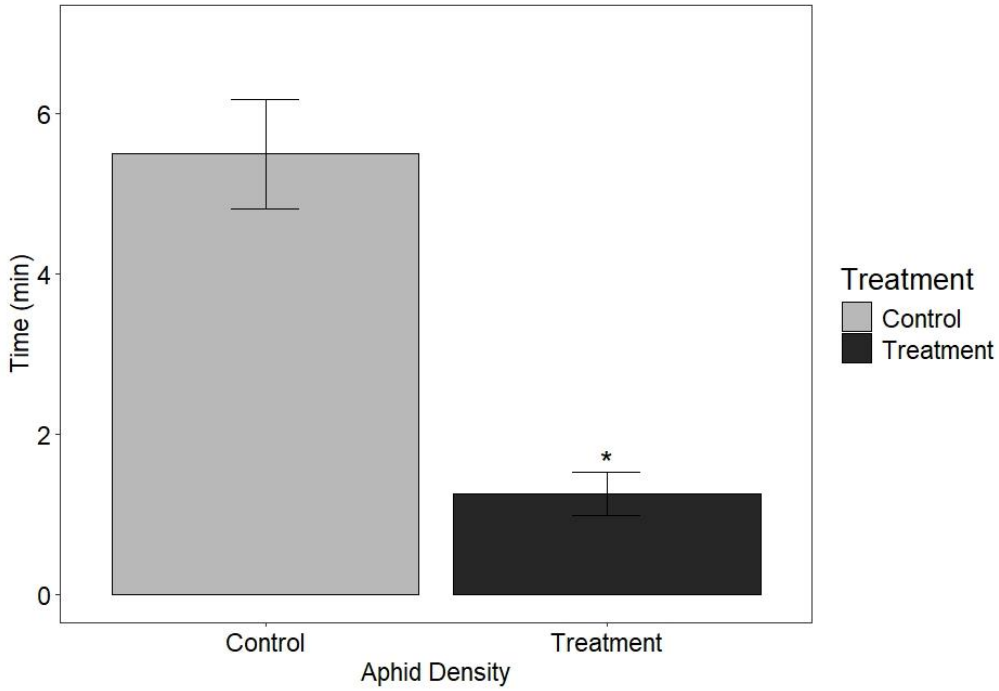
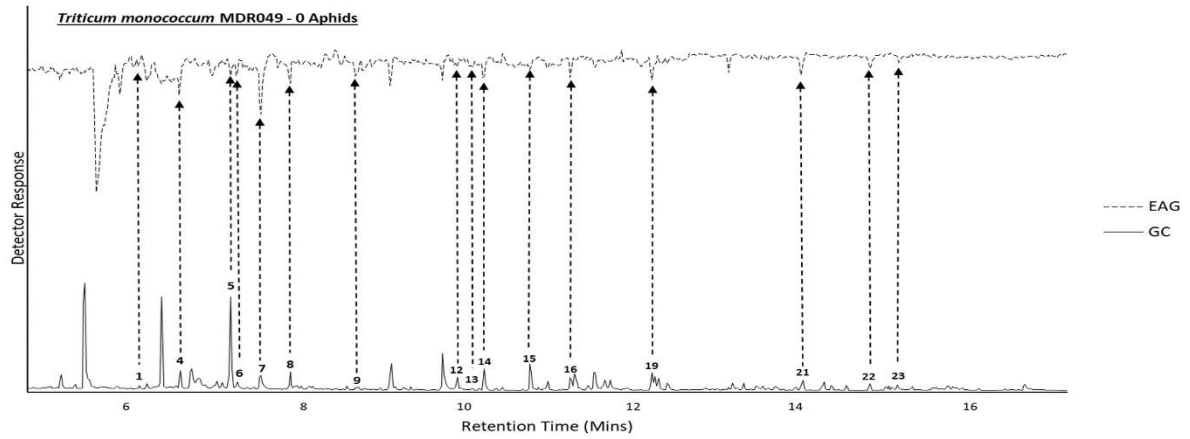
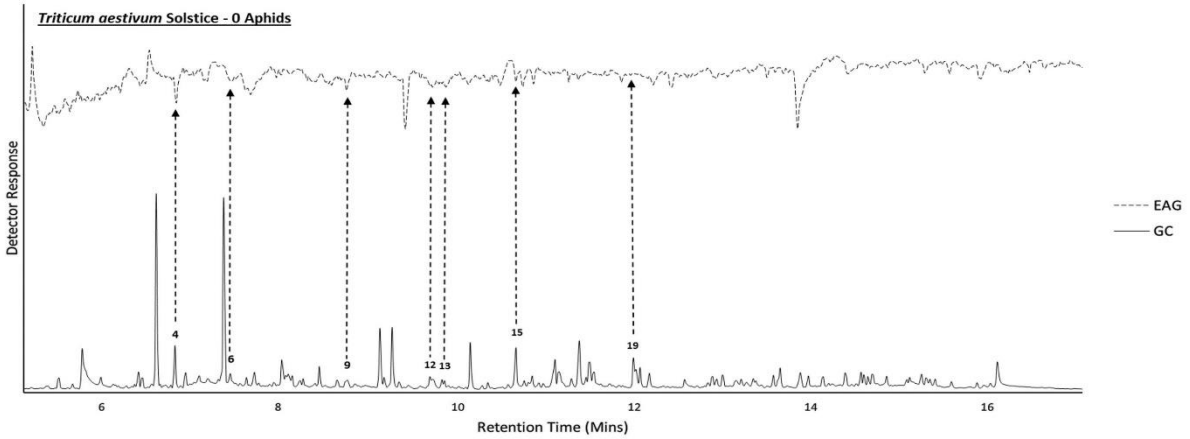
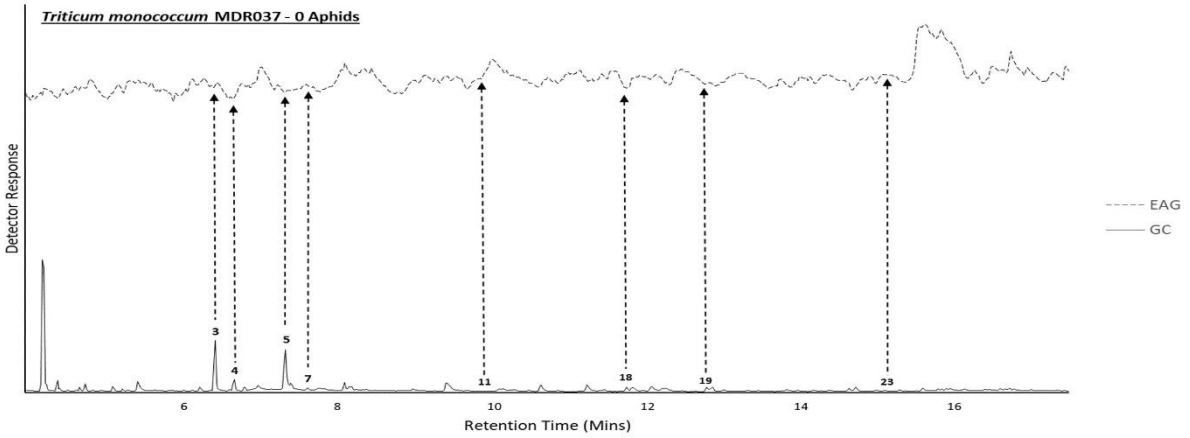
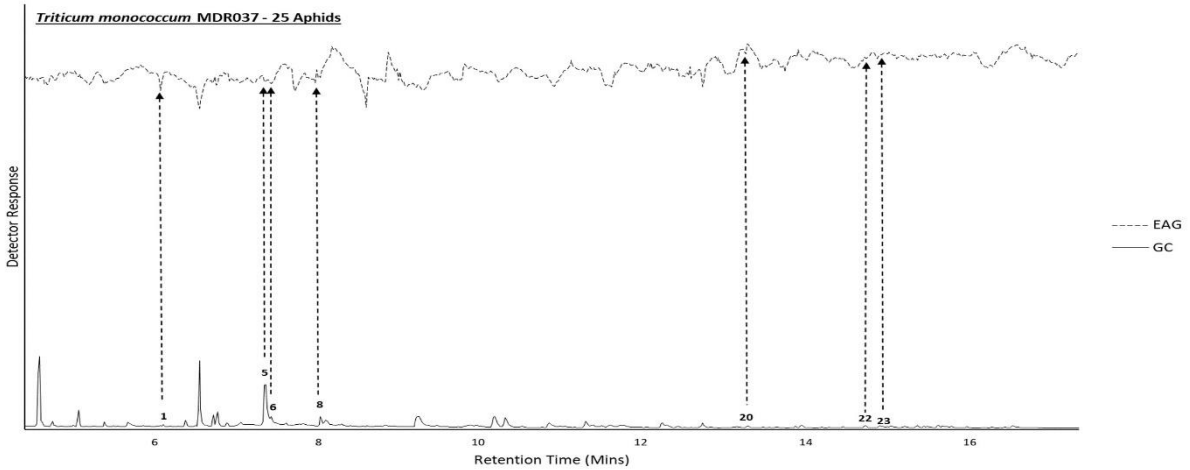


Figure S1 Behavioural response of alate grain aphids, *Sitobion avenae*, in a four-arm olfactometer to VOCs collected for a period of 24h from *S. avenae* (n=25)-infested *Triticum monococcum* MDR049 plants. Data are presented as the mean (min ±SE) time spent in treatment and control olfactometer arms. The experiment included three treatment arms and one control arm. The control was diethyl ether. Asterisks indicate a significant difference between treatment and control (ANOVA: $P<0.05$).


Triticum monococcum MDR049 - 0 Aphids
Detector Response
Retention Time (Mins)
EAG
GC


Triticum aestivum Solstice - 0 Aphids
Detector Response
Retention Time (Mins)
EAG
GC


Triticum monococcum MDR037 - 0 Aphids
Detector Response
Retention Time (Mins)
EAG
GC


Triticum monococcum MDR037 - 25 Aphids
Detector Response
Retention Time (Mins)
EAG
GC

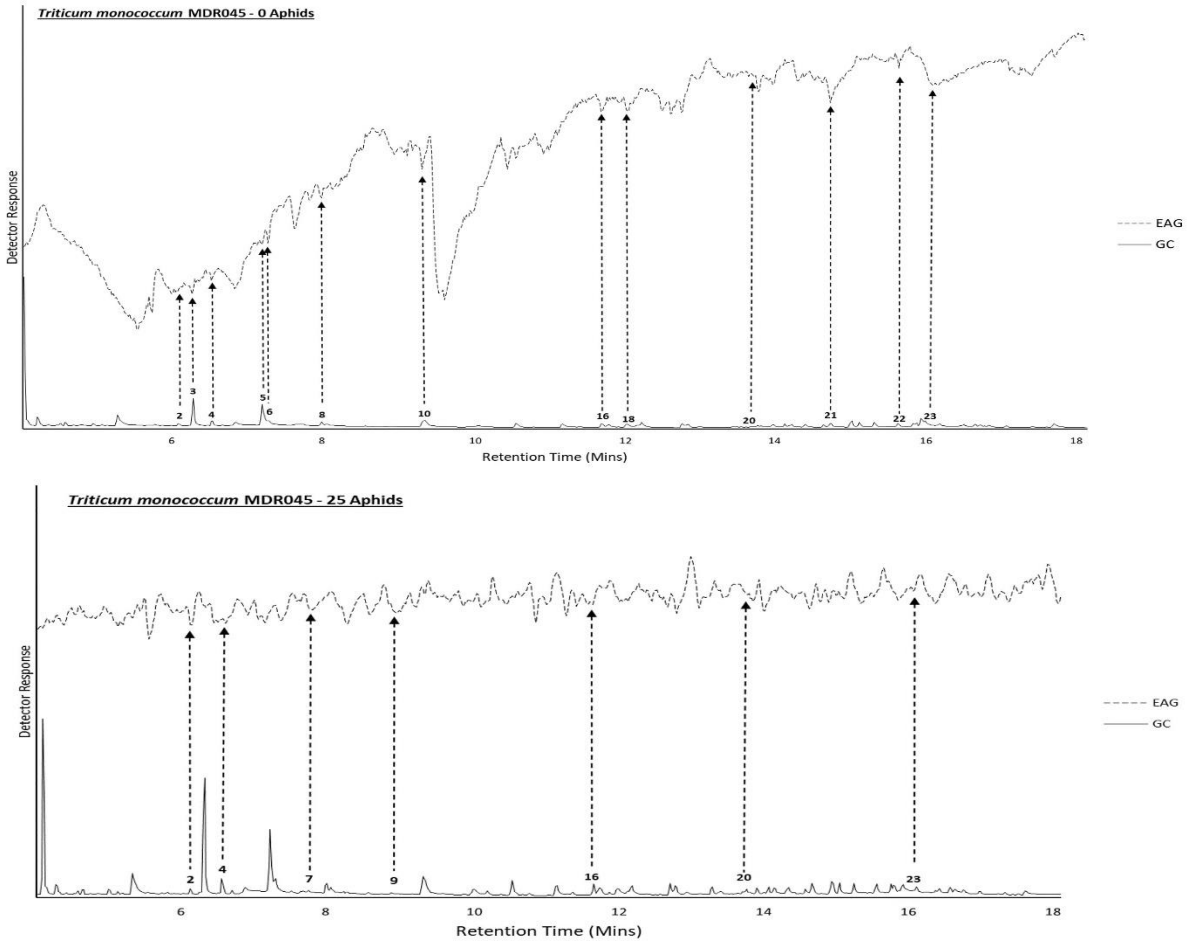


Figure S2 Representative coupled GC-EAG traces showing antennal responses of alate grain aphids, *Sitobion avenae*, against headspace extracts collected from *S. avenae* (n=0)-infested *T. monococcum* MDR049 and *T. aestivum* Solstice and *S. avenae* (n=0, 25)-infested *T. monococcum* MDR037 and MDR045 for 24 hr. Upper trace, response of antenna; lower trace, FID response. GC peak numbers correspond to compounds listed in Table 1 with arrows indicating their respective EAG peak. Identifications confirmed by GC peak enhancement using authentic standards.

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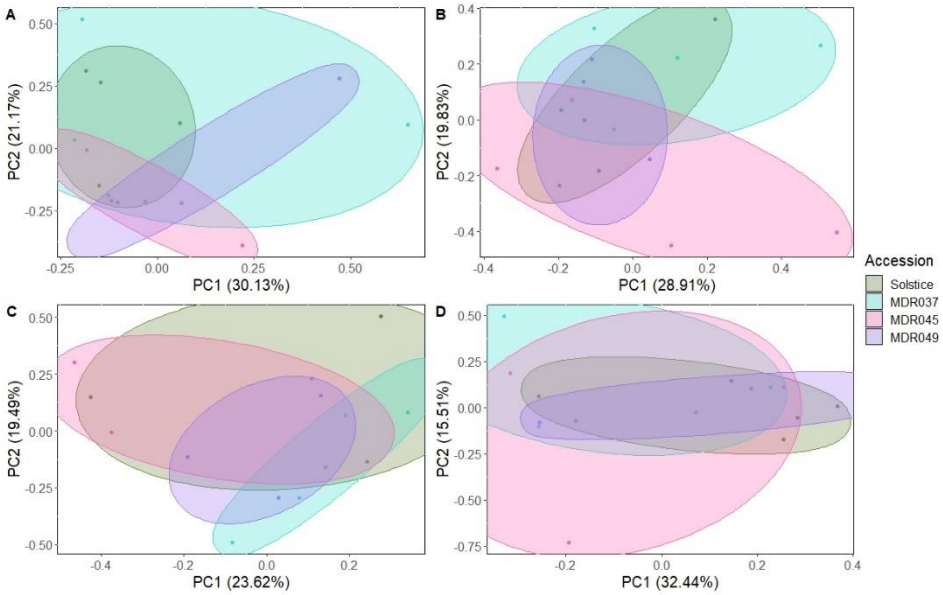

Figure S3. Principal component analysis (PCA) comparing EAG active VOC composition between *S. avenae* (n=0, 1, 5, 10, 25)-infested *T. monoccocum* MDR037, MDR045, MDR049 and *T. aestivum*. Ellipses represent the 95% confidence limits at each accession. Adonis permutation analysis provided $P > 0.05$ across all treatment combinations.